

**Fusegate Spillway for Terminus Dam at Lake Kaweah
Tulare County, California**

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The US Army Corps of Engineers, Sacramento District, is constructing a fusegate spillway for Terminus Dam at Lake Kaweah near the City of Visalia, California. Terminus Dam is an existing rolled earthfill dam located on the Kaweah River. Fusegates are the mechanical equivalent of a fuse plug. A typical installation consists of multiple gates placed on a spillway crest. When installed, the gates approximate the shape of a labyrinth weir in which each gate represents one cycle of the labyrinth. The gates are held in place by gravity. For a moderate range of reservoir levels, the water flows over the fusegates as it would over a labyrinth weir. If the reservoir level exceeds some predetermined value, the fusegate overturns by rotating about its downstream edge. Each gate is set to overturn at a progressively higher reservoir elevation. For the maximum design discharge usually equivalent to the probable maximum flood, all of the fusegates tip and the entire crest length is available to pass the flow.

For Terminus Dam, the fusegate spillway is a significant design departure from the authorized plan for an ogee spillway. The determination of the need to use blasting and ripping rather than just ripping to excavate rock material resulted in a substantial increase in costs for the ogee spillway design. Further studies were made of alternative designs, and two were evaluated in detail with physical model studies: a curved ogee and the eventually selected fusegate spillway. Results of the evaluation indicated that installing fusegates along a reconstructed spillway was the optimum design because (1) the fusegates would fit within the footprint of the existing spillway; (2) the existing dam access bridge upstream of the spillway would not require lengthening; (3) the outflows (routings) from the fusegate design were similar to the outflows from the ogee spillway design.

This presentation will give an overview of the operation of fusegates, with video of the fusegates tipping during a simulation of the probable maximum flood done as part of physical model studies.